

- 22 -

CLAIMS

1. A method of transmitting or broadcasting information in digital form from a satellite to 5 terrestrial receivers in the presence of a terrestrial network effecting links each occupying a specific and narrow frequency sub-band of an extended band, the sub-bands being assigned to different terrestrial zones within which the links are effected, according to 10 which:

- the information is put into the form of digital symbols,
- the digital symbols are distributed over several carriers belonging to a group of carriers that are 15 distributed within the whole of a channel covering at least four of said frequency sub-bands, employing spread spectrum.

2. The method as claimed in claim 1, for broadcasting 20 a television program, characterized in that the channel exhibits a width of:

170 MHz for a satellite link in the 620-790 MHz band
392 MHz for a satellite link in the 470-862 MHz band.

25 3. The method as claimed in claim 1, characterized in that the spread frequencies of one and the same program are distributed over at least the totality of one of the bands assigned to the terrestrial communications in the region where the transmission or broadcast from the 30 satellite is effected.

4. The method as claimed in claim 1, 2 or 3, characterized in that the spread spectrum is effected by implementing an OFDM or COFDM waveform shaping.

35 5. The method as claimed in claim 1, 2 or 3, characterized in that the spreading of each elementary carrier is performed by direct sequence, with a spacing

- 23 -

between carriers that is sufficient to avoid their overlapping.

5 6. The method as claimed in claim 5, characterized in
that the spreading of each carrier is performed by
multiplication by a common sequence, possibly with
identification of the sequence on receipt by knowledge
of an encryption key.

10 7. The method as claimed in claim 5, characterized in
that the spreading of each carrier is performed by
multiplying the I and Q pathways by different
sequences.

15 8. The method as claimed in claim 1, 2 or 3,
characterized in that the spreading is performed by a
frequency interleaving.

20 9. The method as claimed in claim 1 for the
simultaneous broadcasting of several programs,
according to which the modulation step comprises as
many serial/parallel conversions (46₁, ..., 46_n),
separate modulations, inverse Fourier transformations,
digital/analog conversions and change of frequency and
25 transmission as there are programs, the center
frequency of all the carriers and the spreadings being
handled by a common processor (50).

30 10. A system for transmitting or broadcasting
information programs in digital form on the downlink
from a satellite to one or more terrestrial receivers,
comprising:

- means for putting the information into the form of
digital symbols, and
- 35 - means for distributing the digital symbols of each
program over several carriers belonging to the set
of a group of carriers that are distributed in at
least four sub-bands of a band assigned by a radio

- 24 -

resource planning process for communication in disjoint sub-bands in a set of terrestrial zones exhibiting an overlap with the lobe of the satellite, employing spread spectrum.

5

11. The system as claimed in claim 10, in which the group of carriers consists of carriers distributed in at least the totality of the assigned band.

10

12. The system as claimed in claim 10 or 11, according to which said means belong to the payload of the satellite and said satellite receives the programs through an uplink on a single carrier.

15

13. The system as claimed in claim 10 or 11, according to which said means are incorporated into a terrestrial station for transmitting on an uplink to the satellite and the payload of said satellite is transparent.

20

14. A transmitter carried by a satellite or transmitting from the earth to a satellite having a transparent payload for broadcasting to earth, making it possible to implement the method as claimed in claim 1, comprising:

25

- means for putting the information into the form of digital symbols, and
- means for distributing the digital symbols of each program over several carriers belonging to the set of a group of carriers that are distributed in at least four sub-bands of a band assigned by a radio resource planning process for communication in disjoint sub-bands in a set of terrestrial zones exhibiting an overlap with the lobe of the satellite, employing spread spectrum.

30

15. A reception terminal comprising means for performing the operations dual to those of the method as claimed in claim 1.

35